

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior listings of claims in the application.

**LISTING OF CLAIMS:**

1-6. (Canceled)

7. (Withdrawn – Currently Amended) The method of claim ~~[[1]]~~ 18, further comprising corroborating the ~~first and second sperm analysis~~ sperm count, sperm motility, and sperm morphology of the rodents from the contaminated site and of the rodents from the animal reference site with population data.

8. (Withdrawn) The method of claim 7, wherein the population data relates to species diversity.

9. (Withdrawn) The method of claim 7, wherein the population data relates to population size.

10. (Withdrawn) The method of claim 7, wherein the population data relates to sex ratio.

11. (Withdrawn) The method of claim 17, wherein the data relates to lactation state.

12. (Withdrawn) The method of claim 17, wherein the data relates to pregnancy.

13. (Canceled)

14. (Withdrawn – Currently Amended) A method according to Claim ~~[[1]]~~ 18, wherein the contaminated site is contaminated with uranium.

15. (Currently Amended) A method according to Claim ~~[[1]]~~ 18, wherein the contaminated site is contaminated with explosives.

16. (Currently Amended) A method according to Claim ~~[[1]]~~ 18, wherein the rodents from the contaminated site reflect one hundred generations of exposure to the contaminated site.

17. (Withdrawn – Currently Amended) A method according to Claim ~~[[1]]~~ 18, further comprising corroborating the ~~first and second sperm analysis~~ the comparison between the sperm count, sperm motility, and sperm morphology of the rodents from the contaminated site and of the rodents from the animal reference site with data relating to female reproductive state.

18. (Currently Amended) A method for assessing ecological risk to mammals, comprising:

collecting a representative sample of rodents from a contaminated site, wherein the rodents reflect generations of exposure to the contaminated site;

collecting a representative sample of rodents from an animal reference site;

comparing sperm count, sperm motility, and sperm morphology of the rodents from the contaminated site with the rodents from the animal reference site; and

determining whether the comparison between the sperm count, sperm motility, ~~[[or]]~~ and sperm morphology of the rodents from the contaminated site and of the rodents from the animal reference site exceeds ~~one or more~~ sperm parameter benchmarks for sperm count, sperm motility, and sperm morphology, thereby indicating if the rodents from the contaminated site have compromised reproductive success and

making a determination about the health of terrestrial site mammals at the contaminated site based on whether said comparison exceeds the sperm parameter benchmarks.

19. (Previously Presented) A method according to Claim 18, wherein a decrease of approximately 80% to 90% in sperm count indicates comprised reproductive success.

20. (Previously Presented) A method according to Claim 18, wherein a decrease of about 40% to 50% in sperm motility indicates comprised reproductive success.

21. (Previously Presented) A method according to Claim 18, wherein an increase of 4% or more of abnormally-shaped sperm indicates comprised reproductive success.

22. (Currently Amended) A method for assessing ecological risk to mammals, comprising:

collecting a sample of rodents from a contaminated site, wherein the rodents reflect generations of exposure to the contaminated site;

collecting a sample of rodents from a reference site;

comparing sperm count, sperm motility, and sperm morphology of the rodents from the contaminated site with the rodents from the **[[animal]]** reference site;

determining whether the comparison between the sperm count, sperm motility, and sperm morphology of the rodents from the contaminated site and of the rodents from the reference site exceeds one or more sperm parameter thresholds-for-effect, thereby indicating if the rodents from the contaminated site have compromised reproductive success; and

making a determination about the ~~potential health effects~~ risk to mammals at the contaminated site based on whether said comparison exceeds the sperm parameter thresholds-for-effect.

23. (Currently Amended) A method according to Claim 22, further comprising comparing organ-to-body weight ratios of the rodents from the contaminated site with the rodents from the animal reference site to determine if there is a statistically significant decrease for the rodents from the contaminated site thereby establishing an exposure-related change.

24. (NEW) A method according to Claim 22, further comprising matching the reference site and the contaminated site according to hydrology, soil, and topography.

25. (NEW) A method according to Claim 22, wherein said mammals comprise rodents.

26. (NEW) A method according to Claim 22, wherein said mammals comprise mice, rats, voles, or squirrels.

27. (NEW) A method according to Claim 22, wherein sperm count and sperm motility are measured with a visual optics sperm analyzer.

28. (NEW) A method according to Claim 22, wherein said comparing comprises conducting pair-wise statistical comparisons of sperm count, sperm motility, and sperm morphology between rodents of the contaminated site and rodents of the reference site.

29. (NEW) A method according to Claim 28, further comprising conducting a statistical analysis of sperm parameter comparisons using a Wilcoxon Rank Sum Test.